REMARKS

Claims 1-17 were objected to because of informalities and rejected under 35 U.S.C. 112. Claims 1-17 are hereby cancelled without prejudice or disclaimer of the subject matter contained therein. Claims 18-53 are newly added.

The Drawings were objected to in the Office Action. Proposed Drawing corrections in the form of substitute drawings are submitted in the *Letter to the Official Draftsperson* included herewith.

The Specification was objected to in the Official Action and a substitute specification was required. The *Substitute Specification* contains no new matter and is included herewith.

The present invention relates to a magnetic shield within a cathode ray tube (CRT), the magnetic shield is in the shape of a hollow rectangular frustum with modifications near the top of the hollow rectangular frustum that reduce the deviation of the CRT electron beam due to an external magnetic force, such as terrestrial magnetism. Although magnetic shields in CRTs are well known, the particular shape of the magnetic shield in proximity to the top of the hollow rectangular frustum and the corresponding novel influence on the magnetic properties of the magnetic shield of the present invention demonstrate a beneficial effect.

New Claims 18-53 are believed patentable over *Van Mensvoort* ("Van Mensvoort" U.S. Patent No. 5,363,010) and *Maehara* ("Maehara" U.S. Patent No. 6,020,678) and the other cited references based on the following remarks.

Independent Claims 18 and 30 include the limitation of a long side extension at the top of each long side. These long side extensions provide a change to the magnetic field distribution within the magnetic shield by increasing the amount of magnetic flux absorbed near the middle of a side and decreasing the amount of magnetic flux absorbed near the corners of a side, thereby providing a correction to a deviation of the electron beam caused by an external magnetic field in order to reduce the landing deviation of the electron beam. Although reducing the amount of landing deviation is a stated goal in the references, it is not accomplished with the same structure, in the same manner, and with the elegant economy of materials as the present invention. As a further limitation, Claim 39 describes a corresponding short side extension. The structural limitation of the long side and short side extensions is not taught or implied by the cited references in any combination.

Van Mensvoort teaches an oversized scanning aperture having a preferred opening ratio based on the aspect ratio between the long and short axes (Van Mensvoort Abstract and col. 2 ll. 16-28). *Van Mensvoort* teaches the aperture is surrounded by projections and the Office Action gives the height of these projections as H1 and H2 (Van Mensvoort Fig. 8 as copied in the Official Action). However, the projections disclosed in *Van Mensvoort* extend to the corner joints between the sides of the magnetic shield and cannot provide the deviation correction for the electron beam caused by the higher magnetic field density at the center of opposing sides and the lower magnetic field density on both sides of each extension caused by the structurally different construction of the extensions surrounded by the "cut out" portions near the corners. In the Office Action, the shield faces labeled H1 have projections that extend to and around the corner joints. This construction cannot produce the effect of the difference in magnetic field

density on the same face of the shield as in the present invention. In the Office Action, the shield faces labeled H2 have projections that do not extend to the adjacent corner joint, but the remaining distance between the end of the projection and the nearest corner joint is not free of magnetically conductive material. The projection H2 on the corresponding face of the *Van Mensvoort* reference cannot provide the same difference in magnetic field density on the same face of the shield as disclosed in the present invention.

The Office Action suggests that the properties of the present invention regarding the conduction of magnetic flux in the magnetic shield are an inherent property disclosed in the *Van Mensvoort* reference. Applicant respectfully traverses since *Van Mensvoort* does not disclose the necessary structure to effect the difference in magnetic field density with opposing sides of the magnetic shield caused by the presence of the long side or short side extensions. *Van Mensvoort* discloses a continuous projection labeled H1 that extends to and around the nearest corners. This structure differs substantially from that claimed in the present invention. Further, the projection labeled H2 in the Office Action is somewhat similar to the short side extension of height H2 of the present invention. However, the projection labeled H2 in the Office Action does not include the structural separation between the projection and the nearest corner similar to the distance labeled W2 in the present invention. It is necessary that the short side extension be isolated from the nearest corners by this distance W2 in order to produce the desired difference in magnetic flux density as described above. Applicant respectfully requests a reference citation to substantiate any assertion regarding this effect as an inherent property without the structure disclosed in the present invention.

Van Mensvoort does not teach or imply the centered long side or short side extensions to modify the magnetic field distribution in the manner of the present invention. Applicant respectfully submits that *Van Mensvoort* does not teach or imply all the limitations of the present invention.

Maehara teaches a magnetic shield of a different construction making a substantially quadrangular pyramid-shaped frame structure comprising two long side walls with upper and lower portions, two short side walls with upper and lower portions, the two long side walls with substantially V-shaped notches at the top having a maximum depth c (Maehara col. 4 ll. 38-57). *Maehara* relies on selecting the proper ratio of the effective area of the two long side walls compared to the effective area of the two short side walls in order to provide the desired shielding without adjusting the depth of the V-shaped notches (Maehara Abstract, col. 1 ll. 5-12, col. 2 ll. 44-51 and col. 3 ll. 5-18). *Maehara* is attempting to solve the problem of limiting the depth of the V-shaped notches while improving the shielding effect (Maehara col. 5 ll. 63-67, col. 6 ll. 13-26 and col. 6 ll. 58-61). *Maehara* does not teach the use of long side and short side extensions in order to modify the magnetic flux density through a side of the structure with such an extension. Applicant respectfully submits that *Maehara* does not teach or imply all the limitations of the present invention.

The Office Action asserts in point 31 that *Maehara* teaches in Fig. 2A that the "two upper corners (20_1 and 20_2) are cut and that a horizontal length of each cut is less than half of a horizontal length of the two sides." Applicant respectfully requests a citation for this limitation. Further, the slope of the edges of the V-shaped notch corresponding to the "cut" in *Maehara* are in the opposite direction from that disclosed in the present invention. The purpose of the cuts in

the present invention are to define the long side and short side extensions in order to modify the magnetic flux density profile of that side. The sharp step distance (H1 or H2) provides a clear demarcation between the two regions of higher and lower magnetic flux density in a way that a continuously sloping V-shaped notch cannot attain. Applicant respectfully submits that even if *Maehara* and *Van Mensvoort* are combined as suggested, they do not teach all the limitations of the present invention.

The solution of the present invention is economical to manufacture because it relies less sophisticated fabrication techniques than those required in *Van Mensvoort* which requires the sharp bends around the aperture, or *Maehara* which requires the fitting of the upper and lower side walls.

Regarding independent Claims 53, the specification discloses using materials of different effective magnetic permeability in alternating sides in order to increase the amount of magnetic flux absorbed at both ends in the vertical scanning direction (scanning along the short sides to indicate the long sides) and decrease the amount of magnetic flux absorbed at both ends in the horizontal scanning direction (scanning along the long sides to indicate the short sides) to produce the desired effect (Specification page 7 line 19 to page 8 line 10). This limitation is not taught or implied by the cited references in any combination.

Conclusion

In view of above amendments and remarks, it is respectfully submitted that all the claims are in condition for allowance, and such action is earnestly solicited.

If the Examiner believes an interview would be helpful to advance this case, he is invited to contact the undersigned attorney.

I hereby certify that this document is being deposited on June 23, 2003 with the U.S. Postal Service as first class mail under 37 C.F.R. §1.8 and is addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

By: Dorothy L. Chambers

Signature

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Respectfully submitted,

SNELL & WILMER L.L.P.

Joseph W. Price
Registration No. 25,124
1920 Main Street
Suite 1200
Irvine, CA 92614-7230
Telephone: 949/253-4920 (direct)